



# FortiGate-VMX Virtual Appliance

## Introduction

Fortinet's FortiGate-VMX is a VMware Network Extensible (NetX) / NSX compatible network security solution that is purpose-built for VMware vSphere environments. This technical paper explains how Fortinet components and the VMware network security platform interact and work together to deliver best-in-class, hypervisor-based security.

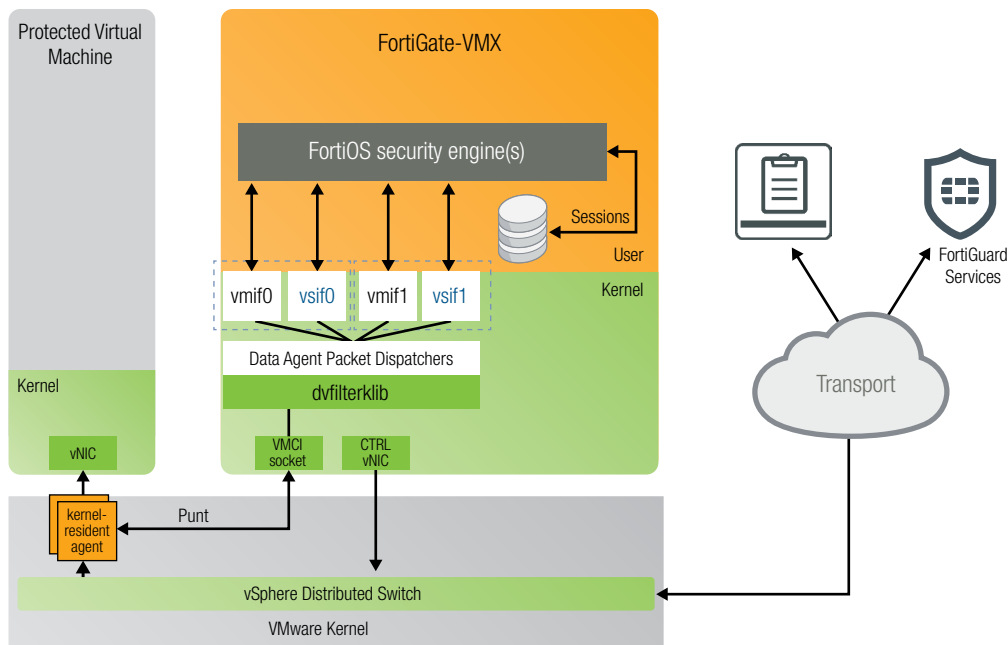
The solution is part of the VMware NSX API ecosystem, but delivers the most complete and full range of network security features including firewall, intrusion prevention (IPS), antivirus (AV), application control, WAN optimization, data loss prevention (DLP), web filtering, anti-spam filtering, and explicit proxy. All features are natively built by Fortinet and updated in real time by FortiGuard advanced threat intelligence.

Traditional agent-based security in virtualization practices introduces some disadvantages including resources and Input/Output Operations Per Second (IOPS) consumption. It's also common to deploy a virtual security appliance at the perimeter or edge to provide network routing and advanced security services. FortiGate-VM is the edge-based security appliance where a virtualized form factor provides faster deployment in private or public clouds.

FortiGate-VMX advances onto the kernel-based scanning process. The FortiGate-VMX does exactly that to integrate with the VMware vSphere 5.5 and up hypervisor and enable security protection, all in one solution.

## Integration Highlights

- Inserts virtual filter between vNIC of the protected VM and the virtual switch.
- The virtual filter intercepts packets and punts them to the service virtual machine FortiGate-VMX for processing
- Deployment is host-based. One FortiGate-VMX per ESXi host
- Support live migration (vMotion) of protected VMs
- Session state kept and transferred to new host the protected VM is moved to



The VMware NetX program enables select TAP Elite partners to use NetX APIs to build network and security services over VMware infrastructure. NetX APIs enable partners to integrate their existing solutions inside VMware workflow management and tap valuable information inside vSphere to provide their services. Solutions currently supported by these APIs include load balancing (LB), WAN optimization, and intrusion detection and prevention (IDS/ IPS) service integration. <http://www.vmware.com/partners/tap-access/vmware-ready/networking-security>

## How does the FortiGate-VMX work?

In VMware NetX-enabled environments, the Fortinet FortiGate-VMX deployments are fully automated to address constantly evolving (i.e., resizing) of ESXi clusters. Policy is dynamically synchronized with all FortiGate-VMX instances deployed to support any re-balancing of workloads in this ever-changing environment (i.e., support for vMotion and full DRS clusters).

As part of the NetX security solution, kernel agents are built and inserted between the dvSwitch and vNIC of every workload (virtual machine) deployed in the cluster. This kernel agent intercepts this traffic at the hypervisor level and hands it off to FortiGate-VMX for proper security policy enforcement.

There are two main components in the solution:

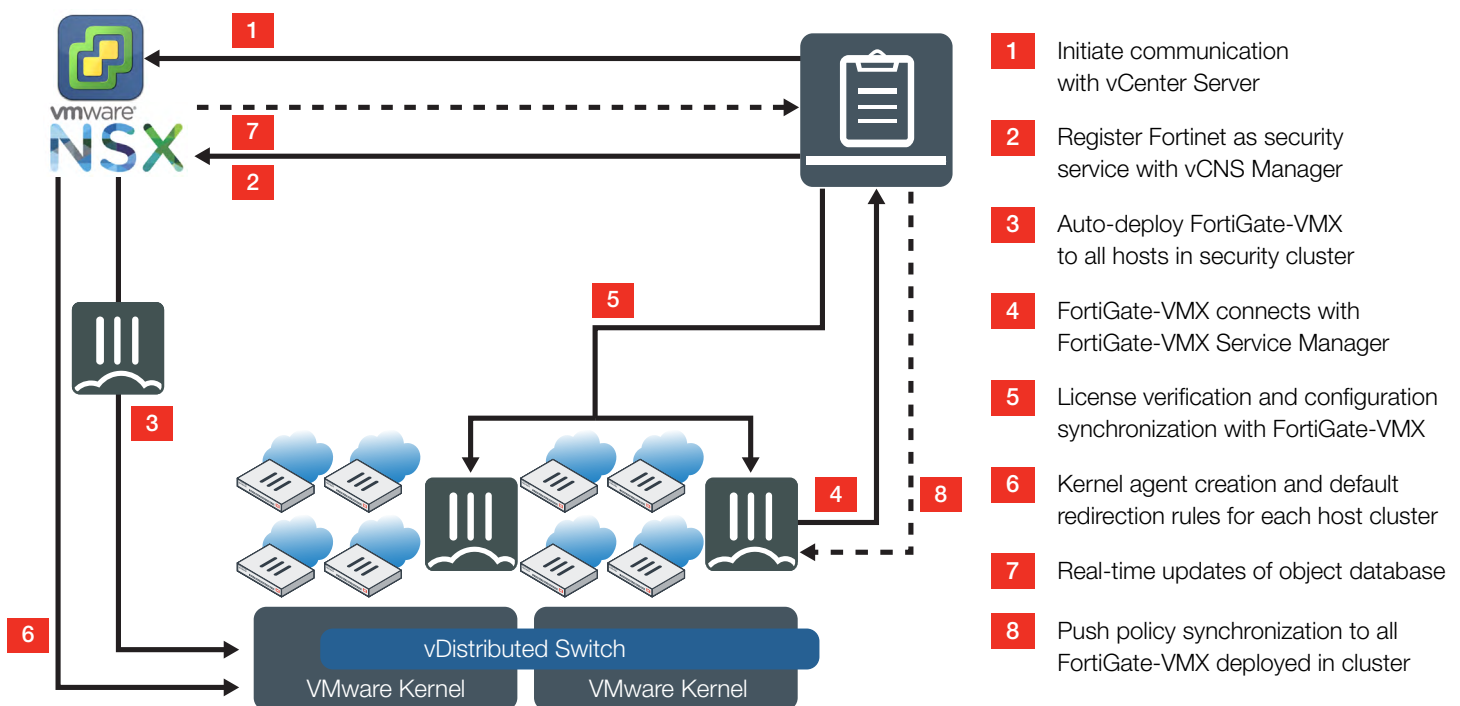
- **Fortinet FortiGate-VMX Service Manager** centrally configures and manages deployed FortiGate-VMX instances
- **Fortinet FortiGate-VMX Virtual Appliance** processes traffic and enforces policy
- Fortinet FortiAnalyzer (optional) receives logs from both the FortiGate-VMX Service Manager and deployed FortiGate-VMX instances

FortiGate-VMX Service Manager communicates with vCenter Server for object database updates. Contained within the object database are all vCenter objects related to the cluster environment(s). Among other things, it contains virtual machine information like UUID, vNIC(s), and network information like dvSwitch configurations and Distributed Port Groups (dvPortGroup). FortiGate-VMX Service Manager makes these objects available to the administrators for security policy creation.

FortiGate-VMX Service Manager communicates with NSX Manager to register the service. It will also update each FortiGate-VMX virtual appliance instances with the latest FortiGuard updates.

## How do the components work together?

1. FortiGate-VMX Service Manager initiates communication with vCenter Server: The connection is required for dynamic updates of the object database.
2. FortiGate-VMX Service Manager then registers the Fortinet security service with NSX Manager (FortiGate-VMX): The registration process uses the NetX management plane API to enable bi-directional communication between FortiGate-VMX Service Manager and the NSX Manager.
3. Auto-deploy FortiGate-VMX to all hosts in security cluster: The NSX Manager collects the FortiGate-VMX image from the URL specified during registration and installs an instance of FortiGate-VMX on each ESXi host in the designated cluster(s). The image update is instantaneous and beneficial for on-demand, software-defined data center requirements.
4. FortiGate-VMX connects with FortiGate-VMX Service Manager: The FortiGate-VMX initiates a connection to the FortiGate-VMX Service Manager to register with the Service Manager and obtain its license.
5. License verification and configuration synchronization with FortiGate-VMX: FortiGate-VMX Service Manager verifies the serial number and synchronizes configuration and policy.
6. Kernel agent creation and default redirection rules for each host in cluster: For all objects secured in the cluster, a default policy of redirection of all traffic to FortiGate-VMX is ready to be inspected.
7. Real-time updates of object database: The vCenter Server and NSX Manager send real-time updates on the changes in the virtual environment to the FortiGate-VMX Service Manager.
8. FortiGate-VMX Service Manager dynamically synchronizes object database and policy to all FortiGate-VMX virtual appliance instances deployed in cluster.



## Data Plane and Control Plane Explained

Data plane and control plane are separated in the above diagram. Data plane mainly is from the VMware kernel agent to FortiGate-VMX instance. Management plane flows communication between FortiGate-VMX Service Manager and vCenter and NSX Manager.

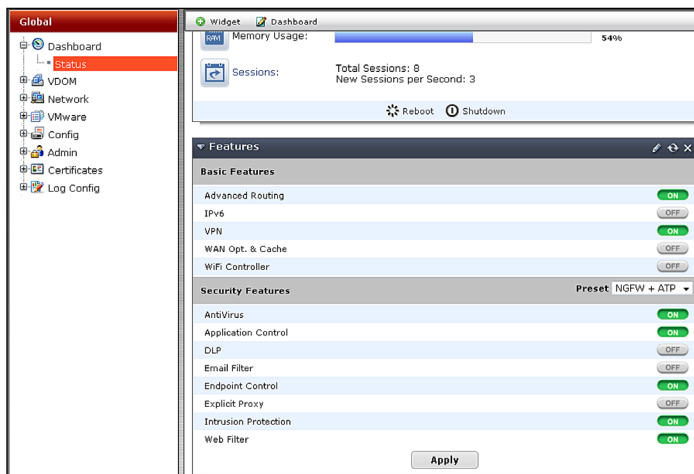
Fortinet FortiGate-VMX Service Manager can integrate with NSX Manager or vShield Manager, allowing for support of current and legacy environments.

### Support Matrix

	Solution	Version Support
Fortinet	FortiGate-VMX Service Manager	v5.2
	FortiGate-VMX	v5.2
VMware	vCenter Server	v5.5, v5.5 Update 1, v5.5 Update 2
	ESXi	v5.5, v5.5 Update 1, v5.5 Update 2
	vShield Manager	v5.5.2.1, v5.5.3
	NSX Manager	v6.1 or later

## How to enable advanced security features of Fortinet FortiOS

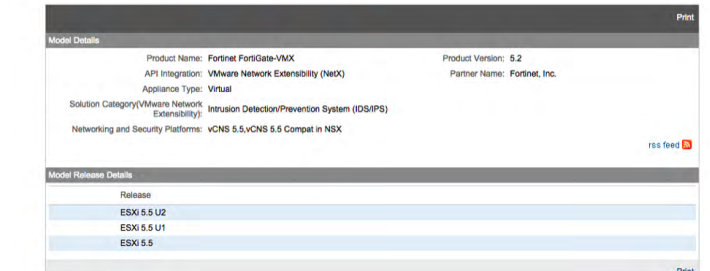
Configuration is easy. Simply access the FortiGate-VMX Service Manager web management console to enable and disable services.



Fortinet FortiGate-VMX is VMware Ready certified today and can be deployed to enterprises of all sizes that require an advanced hypervisor-based integrated security solution within their VMware environments.

Home > Resources > Compatibility Guides

### VMware Compatibility Guide



For more information on Fortinet FortiGate-VMX, please visit the product page at <http://www.fortinet.com/products/fortigate/vmware-virtual-appliance.html>.



## Solution Reference Links

VMware Solution Exchange (VSX)

[https://solutionexchange.vmware.com/store/products/fortigate-vmx-hypervisor-security-appliance--2#.VO\\_EslPF9As](https://solutionexchange.vmware.com/store/products/fortigate-vmx-hypervisor-security-appliance--2#.VO_EslPF9As)

VMware Compatibility List

<http://www.vmware.com/resources/compatibility/detail.php?deviceCategory=security&productid=37704&vcl=true>



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